MICROBIOLOGICAL CHARACTERIZATION OF PSYCHRO-MEZO-THERMOPHILIC ENDOSPORE-PRODUCING BACILLUS SPECIES ISOLATED FROM INDUSTRIAL PROBIOTICS PARTICLES.

Piotr M. Skowron, Department of Molecular Biotechnology, Division of Chemistry, University of Gdansk ; BioVentures Institute Ltd., Poznan/Gdansk, PolandPA INCO S.A., ul. Wspólna 25, 00-519 Warszawa, Poland
piotr.skowron@ug.edu.pl
Joanna Jeżewska-Frąckowiak, Department of Molecular Biotechnology, Division of Chemistry, University of Gdansk, Gdansk, Poland
Krystyna Seroczyńska, GRUPA INCO S.A., ul. Wspólna 25, 00-519 Warszawa, Poland
Justyna Banaszczyk, GRUPA INCO S.A., ul. Wspólna 25, 00-519 Warszawa, Poland
Daniel Woźniak, GRUPA INCO S.A., ul. Wspólna 25, 00-519 Warszawa, Poland
Patrycja Mazur, GRUPA INCO S.A., ul. Wspólna 25, 00-519 Warszawa, Poland
Tadeusz Ossowski, GRUPA INCO S.A., ul. Wspólna 25, 00-519 Warszawa, Poland
Małgorzata Skowron, BioVentures Institute Ltd., Poznan/Gdansk, PolandPA INCO S.A., ul. Wspólna 25, 00-519 Warszawa, Poland
Daria Krefft, GRUPA INCO S.A. ; BioVentures Institute Ltd., Poznan/Gdansk, PolandPA INCO S.A., ul. Wspólna 25, 00-519 Warszawa, Poland
Agnieszka Ozóg, GRUPA INCO S.A. ; BioVentures Institute Ltd., Poznan/Gdansk, PolandPA INCO S.A., ul. Wspólna 25, 00-519 Warszawa, Poland

Probiotics are either bacteria which naturally and steadily reside in the human gastrointestinal tract (GIT), such as certain Lactobacillus sp., or are bimodal, i.e. capable of proliferation both in GIT, as well as in the external environment, these include certain Bacillus sp. In this report we characterize a mixture of Bacillus species present in widely used commercial preparations, present in lyophilized particles. Four endospore-producing species were detected through MALDI TOF mass spectrometry and microbiological analyses: Bacillus mojavensis, Bacillus vallismortis, Bacillus pumilus and Bacillus subtilis. They exhibit an exceptionally wide range of growth temperature: from 20°C to 58oC, thus they are environmentally multi-modal and cover areas occupied both by psychrophiles, mesophiles and thermophiles. Thus, they are exceedingly adaptive to different environments and able to proliferate in highly diverse niches, including the human GIT. Considering that all of the four characterized species have similar characteristics, including endospore production and growth in a wide range of pH, which allows them to survive in transiently low pH during GIT passage, as well as their widespread occurrence in the environment, it is very likely that they have evolved along with mammals as their natural, transient or permanent, GIT inhabitants, though they are not limited to this niche.

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